IDRBT

FAST FORWARD

NEWSLETTER

Volume 4 • Number 2 • May 2001

Institute for Development and Research in Banking Technology
(Established by Reserve Bank of India)

Conference of CPPD Chiefs of Public Sector Banks

A conference of the CPPD Chiefs of Public Sector Banks was held at the Institute on April 17, 2001.

Delivering the keynote address, Dr. V.P.Gulati, Director, IDRBT, emphasized that the formation of a Core Group in each bank, for implementation of IT applications to utilize the INFINET optimally, be accorded top priority. Some banks had already constituted the Core Groups and the other banks should also complete the process soon so that IDRBT can organize orientation workshops for these Core Groups at the earliest, he said.

Dr. A.M Pedgaonkar, GM, DIT, RBI, Dr. V.P Gulati, Director, IDRBT, Shri Sankara Subramanian and Shri Aditya Gaiha, Faculty, at the inaugural session.

The Director also informed the participants that as suggested by Dr. R.B.Barman, Executive Director, Reserve Bank of India, a workshop for the top level management would soon be organized, for individual bank presentations on their IT roadmaps as a follow-up of the recommendations of the Committee on Technology Upgradation in the Banking Sector (TUBS).

Focussing on the implementation of Structured Financial Messaging Solution (SFMS) on INFINET, the Director traced the genesis of SFMS to the consistent demand of the banking industry for provision of inter-bank and intra-bank applications on the INFINET. He said that SFMS would fulfil the primary requirements of banks for structured and secure financial messaging on the INFINET. The SFMS Pilot Project is likely to be completed by August 2001, he said. For the pilot testing, the SFMS central server at IDRBT would be a Tandem machine and at the bank level it would be Sun Solaris machines (Unix).

He further pointed out that SFMS would allow three flavours of Unix to be used in addition to the option of using Windows 2000; IBM MQ Series would be the messaging middleware with database support on Oracle 8i.

He declared that the Institute would also be providing various additional facilities like Internet e-mails, hosting of Intranets and Internet websites for banks. He informed that the Institute would soon have a dedicated 2 Mbps link to the Internet from BSNL. Now that some member banks are showing renewed interest in setting-up ATM networks using VSATs, the Institute had obtained a fresh offer from M/s. HECL for ATM only VSATs and the price list for the same would be circulated soon, he said. He announced that the Institute would also reduce the flat rate for usage in the case of ATM only VSATs. Before concluding, the Director expressed the hope that these measures would enhance the utilization of the VSAT network.

This was followed by a presentation by Shri Aditya Gaiha, Faculty, IDRBT, on the latest developments on INFINET. He talked about the expansion of number of inroutes from 16 to 32, implementation of RIP-2 Version 2, data compression and PPP Sync on the VSAT network. He also dwelt on the need for registering all IP addresses and domain names being used by the CUG members on the INFINET.

CPPD CONFERENCE

Dr. A.M. Pedgaonkar, General Manager, DIT, RBI, then talked about the RBI project, to be implemented shortly: Public Debt Office – Negotiated Dealing Screen System (PDO-NDS). Drawing attention to the project requirements, he said:

- The treasury department of all the banks should be linked to the RBI Regional Office, Mumbai.
- At their treasury departments, banks need to deploy a Windows 2000 Enterprise Edition Server with Oracle 8i database support.
- The client machines would be on Windows 2000 Professional.
- IBM MQ Series would be the messaging middleware.

He advised the banks to take immediate steps for establishing leased line connectivity and for procuring the necessary hardware and system software for this project.

Then, Ms. V. Radha, Faculty, IDRBT, dwelt upon some of the issues and problems in the Mail Messaging Solution on INFINET: domain names, location of mail servers, NATs and Proxies, IP-wise grouping of banks to prevent spamming etc.

This was followed by a session on Implementation of Digital Certification Services on INFINET by Dr. Ashutosh Saxena, Faculty, IDRBT. He described how service branches of different banks at different locations could interact with the National Clearing Cell of RBI for applications such as EFT and ECS in a secure manner using Digital Certificates for the emails.He also explained how remote users could apply for Digital Certificates and utilize them for secure communication.

Dr. N.P.Dhavale, Faculty, IDRBT, then answered queries on the architecture of SFMS as follows:

- IFSC directory services are at application level and are independent of directories at operating system level.
- Even though technically it is possible to switch intra-bank messages at the HUB level, they would be switched at the respective bank gateways only. However in case of bank gateway failure, the HUB will take over the operations of the Bank gateway.
- There will be synchronization of databases once bank gateway comes up and takes over the operations.
- The 11 character IFSC codes were compiled as per the data supplied by individual banks.

Meeting of minds.....deliberations at the conference

Banks were requested to finalize the following for implementation of SFMS immediately after the Pilot Project:

- Identification of Bank Branches
- Servers and thin clients(browsers)
- Number of Smart card readers, smart cards
- Identification of bank applications which require development of APIs with SFMS.

The SFMS Project Team from M/s.Tata Consultancy Services appraised the banks about the project status and project roadmap. They also explained inputs (fields) required by SFMS from bank applications.

There was a debate on whether both message encryption and channel encryption should be present in SFMS. It was agreed that a final view could be taken on this on completion of the pilot project.

The afternoon session was devoted to discussions on the various important issues. A brief

summary of the outcome of the discussions is as under:

- IDRBT may assist the banks in formulating a detailed security policy.
- The new charges made available by M/s. HECL should have a slab on VSATs from 1 to 49 instead of 25 to 49.
- The hardware requirements for SFMS which were circulated in the CPPD Chiefs meeting held on December 14, 2000, would require individual banks to decide upon the following:
  - Number of bank level servers
  - Number of browser interfaces.
  - Number of Smart Card Readers and Smart Card.

This requirement should be communicated to IDRBT as soon as possible.

- Voice over IP would be available on the leased line network provided suitable voice ports were made available by individual banks at their end.
- Banks would inform IDRBT of their preferred Unix flavour for the bank level gateway for SFMS.
- The finalized AMC for the VSAT part of the INFINET would be circulated to all the banks for implementation.
- Banks would address issues relating to Leased Line Connectivity to IDRBT.
- Banks would use e-mail for faster communication with IDRBT. Banks would ensure the availability of their latest e-mail addresses with IDRBT.

There was a presentation in the afternoon from M/s. Oracle Software India Ltd on the pricing policy of Oracle for various products with specific reference to SFMS requirements.

The meeting concluded with a vote of thanks.

Digital Certification and Encryption

This two-day programme, held at the Institute, on February 07 and 08, 2001, enabled the participants to understand the Digital Certification and Encryption process to implement the same at their respective offices.

The major topics discussed include Certification Authority, IDRBT CA Policy and Practice Statement, and MS Proxy Configuration and Set Up. Participants were also provided hands-on training on Certification Encryption

Twenty-two participants from various branches of the Reserve Bank of India participated in the programme. The programme, which was coordinated by Shri Aditya Gaiha, Shri Ashutosh Saxena and Shri Varghese Jacob, Faculty, IDRBT, was well received.

Top Management Seminar on Banking Technology for Bank of Baroda and Punjab National Bank

Two top management seminars on Banking Technology were conducted for Bank of Baroda and Punjab National Bank. While the seminar for Bank of Baroda was conducted on February 13 and 14, 2001, for Punjab National Bank, it was held on February 15 and 16, 2001

Shri. P.S. Shenoy, Chairman and Managing Director, Bank of Baroda, inaugurated the seminar for BoB. He said that this seminar assumes greater importance in view of the fact that Bank of Baroda is about to unveil an ambitions plan for exploiting Information Technology to provide value added services to customers through Omni BoB.

PROGRAMMES CONDUCTED

Shri P.S Shenoy, Chairman and Managing Director, Bank of Baroda, Prof. D.B. Phatak, IIT, Mumbai, Dr. V.P. Gulati, Director, IDRBT and Faculty with the top management of Bank of Baroda.

These seminars helped disseminate knowledge on Emerging Trends in Banking Technology. Some of the major issues discussed include: Financial Network Architecture and Applications, Information Security in Banking Environment, Intranet for Banks and Intra-Bank Applications, Electronic Commerce and Internet Banking, Structured Financial Messaging Solution and Mail Messaging Solution, Banking Technology and Change Management, MIS, EIS and DSS for Banks, IT Project Management and Data Warehousing and Customer Relationship Management.

The Top Management of Punjab National Bank with the Director and Faculty of IDRBT

Shri T.S Narainaswamy, Executive Director, Punjab National Bank delivered the valedictory address for the PNB seminar which concluded on 16th February 2001. In his address, he thanked IDRBT for conducting this seminar at this crucial juncture when PNB is embarking on a programme to leverage the core competence of the bank with appropriate use of I.T.

Both these seminars were highly interactive and well appreciated by the participants. These seminars were coordinated by Shri M.V. Sivakumaran and Dr. V.N. Sastry, Faculty, IDRBT.

Network Management and Trouble Shooting Skills

This weeklong programme from February 26 – Mar 02, 2001, was exclusively held for the Reserve Bank of India.

Introduction to Networking Technologies, WAN Technologies, Indian Financial Network, TCP/IP Overview, IP Addressing, Network Layer and Path Determination, Routing Protocols, RIP, Traffic Management, OSPG, IGRP, End to End Security Services, Configuring modems, Network Trouble Shooting, Voice Over IP and Network Management System were some of the issues discussed. The participants also had hands-on training in most of these areas.

Shri N.Rajendran, Faculty, IDRBT, coordinated the programme.

Banking Technology & Internet Based Training

This 10-day programme was held at IDRBT from March 19–28, 2001.

The programme introduced the participants to the emerging electronic payment systems, e-commerce and internet banking, web technologies for knowledge management, issues involved in

implementing web based training, and emphasised the growing need for developing Internet based training courses.

Faculty members of the Staff Training Colleges and Executives from HRD & Training Divisions of Banks participated in the programme.Dr. V.N. Sastry and Shri M.V. Sivakumaran coordinated the programme.

Data Warehousing & Business Intelligence for Banks and Financial Institutions

Executives and Managers responsible for DW Design, Development and Implementation and Faculty from Staff Training Colleges participated in this programme held from April 16–21, 2001.

The programme introduced the concepts and tools for building Data Warehouse and Data Marts and provided a broad overview of technology infrastructure that will be required to implement an efficient Data Warehouse. The practical issues and technicalities in developing a bank's data warehouse were discussed.

Dr. P. Radhakrishna coordinated this programme, which was well received.

Mail Messaging and Networking for Bank of Maharastra

An exclusive programme on Mail Messaging and Networking was held for Bank of Maharashtra from May 07-11, 2001.

The major issues discussed include TCP/IP Overview, IP Addressing, VSAT, Domain Name Server, Corporate E-Mail, Firewall and NAT, Configuration of MS Proxy Server and Web Server,

SFMS, Router Protocols, Certification over INFINET, OSPF, Network Management, and RFP and Facility Management.

The programme, which had thirty participants, was well received. Shri.N.Rajendran, Faculty, IDRBT, coordinated the programme.

Network Management and Trouble Shooting

This programme held from May 14-18, 2001, was co-ordinated by Shri Aditya Gaiha, Faculty, IDRBT.

The programme aimed at disseminating knowledge, which is important for officers who will be designing, implementing, managing and operating networks using various wide area networks such as the Indian Financial Network.

The issues which were deliberated upon included setting up of Proxy Servers, NATS, Routers, Firewalls etc, Configuration and technical details of modems and routers, Formulation of RFPs for setting up of corporate networks by individual CUG members, and guidelines for CUG members for connectivity to the Leased Line INFINET Network.

Two more programmes on Network Management and Trouble Shooting are scheduled to be held from May 28-June 1 & June 18-22, 2001.

Payment & Settlement Systems - Challenges for Emerging Economies

(June 13-15, 2001)

The Institute for Development and Research in Banking Technology, the Reserve Bank of India and the Bank for International Settlements will jointly organize an International Seminar on Payment & Settlement Systems – Challenges for Emerging Economies, from June 13 –15, 2001.

The seminar aims to provide a platform for the central banks of the region to exchange views on the payment system reform process in their individual countries, on the role of the respective central banks in managing change in payment systems and on how developments in the region link with broader global trends.

It will focus on a number of major topics like retail payment instruments and systems, risks in payment systems, large-value payment systems, core principles for systemically important payment systems, securities settlement systems and the recommendations for these systems, legal issues and the role of central banks in payment systems.

Each topic will be discussed extensively and will be analysed from the financial and operational point of view. This multi-disciplinary approach, it is hoped, would stimulate discussions and provide individual payment system experts with a broader and more integrated view of the various policy issues involved and help them in contributing to the ongoing payment systems reform process in a better way.

The seminar would consist of a number of presentations and group discussions, involving officials from the Bank for International Settlements, from various central banks, in particular those represented in the Committee on Payment and Settlement Systems (CPSS), as well as from the central banks of the South Asian Association for Regional Cooperation (SAARC), Singapore, Malaysia, Indonesia, the Philippines and Thailand.

The seminar is designed to be highly interactive and to enable the participants to review major payment system issues in the light of the developments in their countries. This will be especially relevant with respect to the Consultative Report on Recommendations for Securities Settlement Systems, which was released by the CPSS/IOSCO in January 2001.

For further information, please contact the programme coordinator: Shri V.Visweswar.
e-mail: VVisweswar@idrbt.ac.in

M.Tech Programme in Information Technology

IDRBT in association with University of Hyderabad will be offering an M.Tech Programme in Information Technology (with specialization in Banking Technology and Information Security from the academic year 2001-2002. **The advertisement of the programme is on Page 12.**

The M.Tech Programme is a tri-semester (18 months) full time course. The curriculum is a unique mix of various aspects of Banking Technology and Information Security, which would help create a pool of responsible and resourceful IT professionals for the Banking and Financial Sector. The programme, as it is envisaged, will be a powerful launching pad for a highly rewarding professional career in Banking Technology and Information Security.

It aims at imparting a wide range of IT knowledge relevant to Banking. Courses such as computer organization, operating systems, data structures, programming, database and network concepts and software engineering form the core computer science content. Courses on Banking Technology focus on the use of information technology in several aspects of banking and finance. Courses on Information Security deal with the various security concepts and principles involved in Electronic Banking.

The learning/teaching process will be significantly interactive. The University and IDRBT accord great importance on developing an active interaction with industry and business organization and academic institutions. To encourage this further, customized lectures, case studies etc will be arranged with the guest faculty from reputed academic institutions and guest speakers from industry/business community.

This innovative programme allows the student to:

- Develop the knowledge and skills necessary to understand the relationship between banking technology, information security and advanced information systems technology;
- Enhance career alternatives by gaining perspectives required for effective information security managers, administrators and practitioners;
- Develop advanced competencies associated with technical, supervisory, policy and related positions in information security and computer science;
- Provide advanced preparation in Banking Technology by relating the technical and human components of information security in the administration of banking and finance industry;
- Develop core competencies in database and information system design, financial networks and software product development.

The intake for the programme is open to both direct and sponsored candidates. This being a full time course, the selected, sponsored candidates will have to be relieved of their organizational duties for the entire duration of the course. However, the candidates can undertake the project work (third semester, six months) in their respective banks.

Check out our website:
http://www.idrbt.com for more details.

Indian Financial Network

The INFINET now has around 650 VSATs commissioned across the country. The inroutes of the INFINET, have been increased from 16 to 32.

More than 40 foreign banks, private sector banks, and co-operative banks have evinced keen interest in joining the network as CUG members.

The recommendations of the sub-group of the INFINET Users' Group, which had been formed in order to formulate the details of AMC's for the remote VSATs, have been accepted by the INFINET Users' group. Draft AMC agreements between individual banks had been circulated to all the banks and it is being finalised now.

Digital Certificates for secure e-mail are available on the INFINET for specific applications only, based on individual requirements of CUG members. All IPs used by the CUG members for the INFINET have to be necessarily registered with IDRBT. All traffic, other than the valid 10.X.X.X traffic, has been blocked on the INFINET. IP RIP version II has been effected on the INFINET and the Leased Line Network is in an advanced stage of Implementation.

Structured Financial Messaging Solution

The testing of the Pilot Project will start from the first week of June. Three banks, namely, Bank of Maharashtra, Punjab National Bank, and Canara Bank are the participating Banks in the Pilot Project.

Hardware for SFMS Hub has been installed and the hardware pertaining to the bank gateways and bank branches is in the process of procurement. After completion of the pilot project, the SFMS application will be rolled out for implementation by the remaining member banks of the CUG.

Working Paper No. 6

The Institute has published its sixth Working Paper. It is on "A Framework for Smart Card Payment Systems" by Shri Ashutosh Saxena and Shri Aditya Gaiha

The paper is a compilation of current knowledge relating to a new technology called Smart Card. It begins by understanding the various physical and technical characteristic features of Smart Cards and then moves on to various operational issues involved in setting up of a Smart Card–based Payment System.

The paper presents a foundation for understanding Smart Cards and follows it up by specific application software that is required for understanding the technology – and challenges – associated with the uses of Smart Cards for Banking Applications. Java Cards and Windows for Smart Cards (WfSC) have also been separately discussed.

The paper concludes with an overview of Smart Card Standards for payment systems in the country along with emerging scenarios, and also focusses on the prevailing multi-application Smart Card.

Electronic Check

By Shri. A. R. Dani, Faculty, IDRBT

Electronic Check, also known as E-Check, is the electronic form of the traditional paper cheque. The Financial Services Technological Consortium (FSTC) has proposed a model for Electronic Checks. In this model, the bank issues Check Books containing a specified number of Checks (also known as leaves) to their customers. The customers use these leaves for payments. A customer issues the Check to the person/ institution (known as beneficiary) to whom he has to pay.

Paper cheques are already in use for a wide range of transactions. The customer has to write the name of the payee, the amount, date of payment, and has to sign the Cheque. He can also direct the bank on the mode of payment (like crossing). A cheque is an order for the Bank to make the payment to the person named in the cheque. The payee can deposit the cheque in his bank or it can be paid across the counter.

The amount of the Cheque is realized through a well-defined payment mechanism and the beneficiary gets the amount.

Paper cheques have evolved over a period of time. There are well-defined rules and laws which govern how the payments are to be made. The responsibilities and liabilities of the various entities involved, like the Banks, Cheque payers and beneficiaries are clearly delineated.

E-Check is a logical instrument modelled on Paper cheques and can be used like them. The holder signs a Paper cheque or affixes his thumb impression. The bank while making the payment, verifies this signature or thumb impression.

In the E-Check Model, the E-Check will carry the Digital Signature of the holder, which can be automatically verified for authenticity. A holder of E-Check can carry out transactions like purchase of articles, payments etc. over Internet using E-Check. The Payment Mechanism of E-check is similar to that of the Paper cheques. However, it will be carried out electronically.

The Mechanism

The E-Check works very much like a Paper cheque. Here is the exact process:

- The E-Check writer writes the E-check using an electronic device like a personal computer and issues the e-check to the payee electronically.
- The payee deposits the E-Check with his bank electronically. The payee's bank sends the E-Check for Clearing to the paying bank.
- The paying bank validates the e-check. It debits the account of the E-check Writer.
- Once the E-check is paid, it informs the collecting (payee's) bank and the account of the payee is credited.

Features of E-Check

- Both Paper cheques and E-checks have similar contents. The operations, business model and flow of E-Checks are flexible. Alternative flows are possible.
- E-checks can have additional information that can be exchanged directly between parties. It has unlimited, but controlled, information carrying capability and can be used wherever Paper cheques are used.
- It can enhance the functions and features provided by banks to its customers. The legal framework of the Paper cheque can be used.
- E-Check can be integrated with existing Electronic Payment Mechanisms.
- It provides adequate security features so that it can be used on the Internet. It reduces the risk of fraud losses for all parties involved in the transactions.

  Software can be developed to provide for automatic validation of the contents of E-Checks and security features can be built in the system. It can be also used by any account holder of the Bank depending upon the policy of the bank and can be used with existing accounts.
- Various types of hardware platforms and software applications can be used to initiate E-Checks.

The Technology

The FSTC has proposed the use of Financial Services Mark Up Language (FSML), Digital Certificate, Digital Signature, and Smart Card for E-Checks.

FSML

The Financial Services Markup Language (FSML) is a block structured data description language(DDL), which is very similar to Hyper Text Mark Up Language. The use of tags to structure the messages into blocks and data elements is proposed in FSML. It defines the specific data elements necessary for creating electronic payment messages. FSML is more oriented towards defining the different blocks unlike HTML, which is oriented towards displaying the documents. FSML defines various data blocks and elements with clarity to allow a software application to process the document completely. The full range of payment instructions can be given using FSML. The latest versions are also XML compliant.

Digital Signature

A Digital Signature is a unique number, which corresponds to the message being sent and is used to ensure that the message is not altered during the transmission from sender to receiver. A Digital Signature can be verified by anyone. However, only individuals authorized to create Signatures can create it.

Digital Signature Algorithm (DSA) has been established as a Digital Signature Standard by the National Institute for Standards and Technology (NIST), USA. It specifies how DSA is to be used for generating Digital Signatures. When an E-Check has been digitally signed, the recipient can verify that it is authentic, the authorized individual signed it, and that it was not altered or modified in any way since it was issued. Digital Signatures are virtually impossible to forge as the verification and authentication of Digital Signatures is performed automatically, systematically and is absolutely precise. Thus, an issuer of a digitally signed document cannot, at a later time, repudiate the signature.

E-Check technology specifies how the basic technology of Digital Signatures can be applied to a mark-up language based document. It also provides for the signatures of various types including basic signing, co-signing, and countersigning. Digital Signatures are to be used with Digital Certificates.

A Digital Certificate is similar to an identity card, which is in electronic form and is issued by the same certification Authority, also known as trusted third party. The Digital Certificate holds the public key of the signer. This key can be used to validate the Digital Signature, by means of cryptographic computation.

In E-Checks, Digital Certificates are used to enable the receiver of the check to determine the validity of the signatures. The Digital Certificates provide a mechanism to distribute the public keys and authenticate the parties involved in the transactions. The FSML provides the Certificate Block, in which the sender can send his Digital certificate. The E-Check definition allows the Digital Certificate, which can be issued by the Bank or by a trusted third party.

Another feature of E-Check definition is that the Digital Signatures can be applied to the different document blocks, rather than to the entire document. This helps to separate the parts of a document from the original, without compromising the integrity of the Digital Signature.

Security Features

E-Check provides the security features, which can make it a Payment Instrument that provides high degree of security for INTERNET transactions. The security features provided in E-Check definition are:

1) Authentication
2) Public Key Cryptography
3) Digital Signatures
4) Digital Certificates
5) Duplicate Detection
6) Encryption

E-Check can be issued as FSML document

on smart card or floppy by the bank. It can be signed and encrypted while it is issued. This makes it a very secure Payment Instrument over Internet. In E-Check, an attempt is made to enhance the banking practices with added security so that breaking of the cryptographic barriers becomes difficult and the risks of fraudulent transaction are minimized. The bank can issue the E-Check in encrypted form and can retain the private key with itself. This can enhance the security features significantly.

Plus Points

E-Check offers certain significant advantages over other instruments of Internet transactions. It is easy to use and understand for the new users, because it is very similar to paper cheques in operation. The bank can decide the policy of issue and use of E-check. It can be linked with the existing Accounts in the banks. Alternative flows are possible for E-Check implementation. In future, many businesses as well as the individual customers will use E-Checks as well as paper cheques from the same account. It can easily coexist in the existing banking set up.

Banks can implement E-Check with small additional investments. The E-Check writing/ depositing software can be developed in the form of Applet, which can be downloaded from the Website. E-Check can also be implemented on floppy. However Access Cards provide better security. In case of Access Cards, User PCs must have a Smart Card Reader. The Banks will need software, which can read the received E-Mails and sort out E-Checks. These separated E-Checks can be converted into ASCII files, which can then be integrated into regular Payment System channels.

The existing Clearing and Settlement systems for inter-bank and intra-bank payments can be used for E-Checks. The banks should be able to offer E-check to their customers with modest investments. Once the technology is developed and is in place, the processing of E-Checks will become more efficient and reliable, and it will be a better option than paper cheques.

An Electronic Check can be embedded in a file containing account information, Digital Signatures and other data. These files will be verified and validated electronically and the data will be available in electronic format. The data in electronic format will enable the bank to verify and process E-Checks automatically. The infrastructure required for its implementation is already available with most of the banks.

The users of E-Check also require only minimal infrastructure. All they require is an account in the bank, Internet access, PC, Mailing Facility and Access Cards to provide the security.

There are also built-in security features, which provide more security to E-Check users. In short, E-Check offers the speed, cost-effectiveness and reliability without requiring the large-scale investment and restructuring. It is easy to understand and requires minimal training. These advantages make it an effective payment instrument over Internet.

Similarly, an E-Check system can be used without bilateral agreements or real-time link-ups with vendors. As it utilizes public networks, like the Internet, making peer-to-peer transactions is quite simple. The Laws required to handle E-Checks can be built up from the laws which are in use for the Paper cheques. As compared to Credit Card, the transaction cost for E-Check will be much lower, since E-Check can be created offline. It carries lesser risk for banks as compared to Credit Card since the E-check holder will be the regular customer of the bank.

The E-check reduces the risk for customers, since it cannot be used like the stolen Credit Card numbers on the Internet. In E-Check, a key can encrypt the account details of the Customer, which is available only with the bank. It uses Digital Certificate and Digital Signatures with Private Key and access cards. This means that, for unauthorized use of E-Check, one must know the Private key of the holder. Another advantage of E-Check over Debit Cards/Credit Cards is that it can be easily used in high value transactions and in business-to-business payment.

Careers at IDRBT

The Institute is on the lookout for people with adequate experience and skills in Information Technology, with academic and research inclination to work on areas such as E-Commerce Technologies, Electronic Payment Systems, Security, Standards, Certification, Data Warehousing & Data Mining, Multimedia, Risk Management, and Messaging Solutions etc.The Institute envisages to network with reputed Institutes like IITs, IIMs, IISc, ISI, Banking Staff Colleges to promote the effective use of IT and Security related aspects.

Positions Available

1) FACULTY

The Institute has openings in permanent positions at the level of **Assistant Professor**, **Associate Professor** and **Professor**. The faculty members are expected to actively contribute to Research, Education and Training, besides undertaking Consultancy assignments from Banking and Financial Sector. Applicants should possess a Ph.D. in Computer Science or closely related field, and research interest with excellent academic credentials and relevant experience. Candidates with interdisciplinary backgrounds in IT, Banking and Finance are encouraged to apply.

The pay scales of Faculty members are at par with those in IIT's/IIM's and in addition, the Institute also provides liberal perks such as Leased Accommodation, Conveyance, Computers at Home, Advance for Housing, Vehicles etc.,

2) PROJECT CONSULTANTS/ASSOCIATES

We are looking for competent Professionals to bridge the gap between IT, Banking and Finance applications, with an experience of 4- 6 years and expertise in the Institute's priority areas such as Network and Communication, Messaging solutions, Web Based Learning, Security Technologies, Business Intelligence etc. Applicants should possess M.Tech(CS)/M.Sc(CS)/ MCA or any other related area.

These positions are project based contractual assignments, initially for a period of 3 years and are subsequently extendable.***Professional bankers with relevant experience may also be considered on Deputation basis for the above positions.***

Interested ***c***andidates may mail their detailed resume, superscribing on the envelope indicating the position applied to: The Director, IDRBT, Castle Hills, Road No. 1, Masab Tank, Hyderabad – 500 057 or email to: VPGulati@idrbt.ac.in at the earliest.

IDRBT Research Fellowships (Ph.D Programme)

IDRBT offers Research Fellowships for a period of 3-5 years, and the Research Fellows are paid a stipend of Rs.8,000/-, 9,000/- and 10,000/- p.m respectively during the first, second and third year onwards. The Research Fellows will be supporting the Faculty of the Institute in the on-going projects and projects in the offing.

They will have the opportunity of getting registered for Ph.D. programme of University of Hyderabad (UH) in June 2001, subject to fulfilling the selection criteria of UH and IDRBT. Applicants should possess M.Phil(Physics/Maths/Statistics/ CS/Electronics)/M.Tech (CS or closely related area)/ First class B.E./B.Tech. (CS) or First class Master's Degree in CS/Maths/Statistics/ Physics/ Electronics/Management with knowledge in computers. For admission into Ph.D. of UH, the candidates can respond to the advertisement of admission announcement 2001-02 issued by University of Hyderabad, during first week of May, 2001.

Applicants meeting the above criteria may send their detailed resume, superscribing on the envelope indicating "Research Fellow Programme" applied to: The Director, IDRBT, Castle Hills, Road No.1, Masab Tank, Hyderabad – 500 057, at the earliest.

ANNOUNCEMENT

University of Hyderabad

in collaboration with

Institute for Development and Research in Banking Technology

offers

M. Tech. in Information Technology

University of Hyderabad, recently bestowed with the status of "University with Potential for Excellence" in association with IDRBT will be offering a unique multi-disciplinary tri-semester (18 months) M.Tech in Information Technology (with specialization in Banking Technology & Information Security), from the academic year 2001-2002, pending approval of the AICTE/UGC.

This programme aims at imparting in-depth knowledge and state-of-the-art expertise to the students through innovative learning supported by world class research and technology leadership so as to create a pool of responsible and resourceful IT professionals for the Banking and Financial sector.

The intake for the programme is open for both Direct and Sponsored candidates. The employees working in Banks and Financial Institutions are eligible to apply under sponsored category. The candidates under both the categories should fulfill the following eligibility criteria: -

- Bachelor's degree in Engineering/Technology (B.E./B.Tech.); OR M.Sc. with B.Sc. level Mathematics; OR Master's degree in Computer Applications (MCA)
- The qualifying degree must be from a recognized University/Institute and the candidate should have obtained a first class with 60% marks.
- In case of sponsored candidates, three years of relevant experience is required.

Candidates who are appearing in the final examination of the qualifying degree may also apply.

The entrance examination for admission to the programme for the academic year 2001-02 will be held on June 23, 2001 (10.00 am – 12.00 noon) at Bangalore, Bhubaneswar, Chennai, Cochin, Delhi, Guwahati, Hyderabad, Madurai, Pune, Tirupathi, Vijayawada and Visakhapatnam. The University reserves the right to cancel any of the examination centres.

IDRBT will facilitate provision of Education Loans for direct candidates upto Rs. 2 Lakhs from banks at concessional interest rates to meet their expenditure during the study.

Prospectus and Application forms can be obtained in person from May 31,2001 from the Academic section, Administrative Building in the University campus, Hyderabad - 500 046 or from IDRBT Campus, Castle Hills, Road No.1, Masab Tank, Hyderabad - 57 against cash payment of Rs.100/- for SC/ST/PH candidates and Rs.225/- for General Category.

The Prospectus and Application form can also be obtained by post from the Dy. Registrar (Acad. & Exams), University of Hyderabad, P.O. Central University, Hyderabad - 500 046 by sending (a) a requisition indicating "M.Tech. (Information Technology)", (b) one self addressed slip, (c) a crossed demand draft for the specified amount together with Rs.15/- towards postal charges drawn in favour of the Finance Officer, University of Hyderabad, on State Bank of India, Hyderabad Central University Campus Branch, Hyderabad (Code 5916) or on Andhra Bank, Nampally Branch, Hyderabad (Code 378). University will not be responsible for any postal delay. Candidates are, therefore, advised to apply well in time.

For further details visit our websites: www.uohyd.ernet.in (or) www.idrbt.com. Sponsored candidates can also get the Prospectus & Application form as mentioned above and can submit the NO OBJECTION CERTIFICATE from their employer at the time of admission.

Last date for counter sale of Prospectus/ application and submission of application forms is June 11, 2001.

Institute for Development and Research in Banking Technology
(Established by Reserve Bank of India)

Castle Hills, Road No. 1, Masab Tank, Hyderabad - 500 057, India.
EPABX : 3534981-84 (4 lines), Fax : (040) - 3535157, 3536361
e-mail : publisher@idrbt.ac.in • Website:http://www.idrbt.com